

What is claimed is:

5/26/03
alkaline

1. A composition for planarizing an organosilicate layer, comprising:
a slurry including an abrasive material dispersed in a solvent, wherein the slurry has a pH greater than about 9.
2. The composition of claim 1 wherein the abrasive material is selected from the group consisting of silica (SiO_2), aluminum oxide (Al_2O_3), zirconium oxide (ZrO_2), titanium oxide (TiO_2), and combinations thereof.
3. The composition of claim 1 wherein the abrasive material has an average particle size greater than about 35 nm (nanometers).
4. The composition of claim 1 wherein the pH of the slurry is adjusted by adding a source of hydroxyl ions thereto.
5. The composition of claim 4 wherein the source of hydroxyl ions is selected from the group consisting of potassium hydroxide (KOH), ammonium hydroxide (NH_4OH), sodium hydroxide (NaOH), calcium hydroxide (CaOH), magnesium hydroxide (MgOH), and combinations thereof.
6. The composition of claim 1 wherein the slurry further comprises one or more materials selected from the group consisting of chelating agents, buffers, oxidizers, and corrosion inhibitors.
7. The composition of claim 1 wherein the concentration of the abrasive material in the slurry is within a range of about 10% by weight to about 60% by weight.
8. A method for planarizing an organosilicate layer, comprising:
positioning a substrate having an organosilicate layer thereon in a polishing system;
providing a slurry including an abrasive material dispersed in a solvent to the polishing system, wherein the slurry has a pH greater than about 9.0; and

polishing the organosilicate layer using the slurry.

9. The method of claim 8 wherein the abrasive material is selected from the group consisting of silica (SiO_2), aluminum oxide (Al_2O_3), zirconium oxide (ZrO_2), titanium oxide (TiO_2), and combinations thereof.
10. The method of claim 8 wherein the abrasive material has an average particle size greater than about 35 nm (nanometers).
11. The method of claim 8 wherein the pH of the slurry is adjusted by adding a source of hydroxyl ions thereto.
12. The method of claim 11 wherein the source of hydroxyl ions is selected from the group consisting of potassium hydroxide (KOH), ammonium hydroxide (NH_4OH), sodium hydroxide (NaOH), calcium hydroxide (CaOH), magnesium hydroxide (MgOH).
13. The method of claim 8 wherein the slurry further comprises one or more materials selected from the group consisting of chelating agents, buffers, oxidizers, corrosion inhibitors, and combinations thereof.
14. The method of claim 8 wherein the concentration of abrasive material in the slurry is within a range of about 10% by weight to about 60% by weight.
15. The method of claim 8 wherein the organosilicate layer is polished by placing it in contact with a polishing pad, the polishing pad having the slurry thereon, and wherein the polishing pad is disposed upon a rotatable platen.
16. The method of claim 15 wherein the polishing pad comprises polyurethane.
17. The method of claim 15 wherein the organosilicate layer contacts the polishing pad with a pressure within range of about 1 psi (pounds/square inch) to about 14 psi.

18. The method of claim 15 wherein the platen rotates at a speed within the range of about 0.1 m/s (meters/second) to about 2 m/s.

19. A method for fabricating a device, comprising:
providing a substrate having conductive features formed thereon with an organosilicate layer deposited between and on top of the conductive features;
positioning the substrate in a polishing system;
providing a slurry including an abrasive material dispersed in a solvent to the polishing system, wherein the slurry has a pH greater than about 9; and
polishing the organosilicate layer using the slurry.

20. The method of claim 19 wherein the abrasive material is selected from the group consisting of silica (SiO_2), aluminum oxide (Al_2O_3), zirconium oxide (ZrO_2), titanium oxide (TiO_2), and combinations thereof.

21. The method of claim 19 wherein the abrasive material has an average particle size greater than about 35 nm (nanometers).

22. The method of claim 19 wherein the pH of the slurry is adjusted by adding a source of hydroxyl ions thereto.

23. The method of claim 22 wherein the source of hydroxyl ions is selected from the group consisting of potassium hydroxide (KOH), ammonium hydroxide (NH_4OH), sodium hydroxide (NaOH), calcium hydroxide (CaOH), and magnesium hydroxide (MgOH).

24. The method of claim 19 wherein the slurry further comprises one or more materials selected from the group consisting of chelating agents, buffers, oxidizers, corrosion inhibitors, and combinations thereof.

25. The method of claim 19 wherein the concentration of abrasive material in the slurry is within a range of about 10% by weight to about 60% by weight.

26. The method of claim 19 wherein the organosilicate layer is polished by placing it in contact with a polishing pad having the slurry thereon, and wherein the polishing pad is disposed upon a rotatable platen.
27. The method of claim 26 wherein the polishing pad comprises polyurethane.
28. The method of claim 26 wherein the organosilicate layer contacts the polishing pad with a pressure within a range of about 1 psi (pounds/square inch) to about 4 psi.
29. The method of claim 26 wherein the platen rotates at a speed within a range of about 0.1 m/s (meters/second) to about 2.0 m/s.